SAVITRIBAI PHULE PUNE UNIVERSITY

(FORMERLY UNIVERSITY OF PUNE)

MASTERS IN ARCHITECTURE

M.ARCH (DESIGN AND PROJECT MANAGEMENT)

BOARD OF STUDIES IN ARCHITECTURE

FACULTY OF SCIENCE AND TECHNOLOGY

To be implemented from

AY 2023-24

SEMESTER III

SUBJECT TITLE: **Project Cost & Contract Management Studio**				
Subject Code 2019DPM 301				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	2	Sessional	300	
Studio Periods per week	8	Viva/Oral	100	
Total Contact Periods (60 min period) Per week	10	In-semester Examination	Nil	
		End-semester Examination	Nil	
Total Credits	**10**	**Total Marks**	**400**	

COURSE OBJECTIVES

Imparting knowledge of budgeting and controlling project cost, minimizing project overrun risks and maximizing return on investment, during the pre-construction phase of the project.

Developing skill of informed decision making through value management and understanding the significance of material and work specification in project cost estimation

Developing skills of negotiating and managing contracts effectively, avoiding ambiguity and disputes. This course also involves effective supply chain management involving suppliers and subcontractors, leading to better coordination and improved project performance

COURSE CONTENT

Unit 1:

Introduction to cost management- Types of cost: direct, indirect, fixed & variable, planning and controlling cost management, estimation types, preliminary estimate, detailed estimate, justified contingencies, inflation and escalation adjustment, rate analysis, project life cycle costing, Risks in cost management, time-cost relation, cost contract relation;

Unit 2:

Earned Value analysis for cost performance, value engineering and management, cost baseline, scope change adjustment in cost, real-time cost management, cost of quality, cost benefit analysis; Valuation of building projects, valuation methods, market analysis and appraisal techniques;

Unit 3:

Introduction to contract management, Indian contract act, contracts and agreements, types of contracts used for building projects, Contract standards & frameworks (General & Special conditions of contract CPWD, FIDIC, JCI etc.), Tendering process (pre-tendering, bid organization, invitation, receipts & evaluation negotiations, award of work), bid review & evaluation, methods of subcontracting; Contract close-out; Defect liability and performance guarantee;

Unit 4

Construction specific laws and regulations, labor laws - The Building and Construction Workers (regulation of employment and conditions of service) Act, 1996, Workmen's Compensation Act, Payment of Wages Act, The Employees Provident Fund and Miscellaneous provisions Act 1996,

Unit 5

Impact of Statutory clearances, permits, approvals from AHJs, bylaws of local authorities and regulatory acts such as RERA

Unit 6

Disputes in contractual obligations, dispute review and resolutions, dispute resolution board proceedings, Arbitration and Conciliation (Amendment) Act 2021, Arbitration proceeding, tribunal composition, time frame of appeal and enforcement of award.

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

Studio activities include working on live projects to understand the cost planning and control measures in various stages of the project. In depth study and analysis of Contractual engagements in the project and provisions of contract for dispute resolution. Case based learning on statutory approvals in report format.

OUTCOME

Through this course, contractual requirements of a project in its pre-construction phase are realized. Technical and practical knowledge of cost management along with the contracting process is developed. Managerial skills to streamline the process and minimize disputes is gained.

RECOMMENDED READING

- Brian Greenhalgh (2016) Introduction to construction contract management
- CA Virendra K. Pamecha (2022) Building and Construction: Projects and Contracts - Along with Apartment Ownership Law & Fire Safety Rules & Regulations
- Ramesh S. Prabhu, Kaushik Sampat, S.S. Sandhu, Gautam Chatterjee and Sumant Kolhe, B.D. Kapadnis, D.R. Hadadare (2021) Maharashtra RERA Law & Practice, Taxmann
- General Conditions of Contract (2022), CPWD
- S. Seetharaman – Construction engineering and management
- Prasanna Chandra – Projects: Planning, analysis, selection, financing, implementation and review.

SUBJECT TITLE: **Research II**				
Subject Code 2019DPM302				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	2	Sessional	100	
Studio Periods per week	1	Viva/Oral	Nil	
Total Contact Periods (60 min period) Per week	3	In-semester Examination	Nil	
		End-semester Examination	Nil	
Total Credits	**3**	**Total Marks**	**100**	

COURSE OBJECTIVES

1. To enable the student to undertake methodical research on a topic in Design and Project Management and to communicate it through technical writing.

COURSE CONTENT

Unit I: The subject deals with selecting an appropriate topic from the field of design management or project management or allied disciplines that will contribute to better understanding, theorising or application of design management or project management.

The topic of the research paper could either be theoretical or application oriented

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

Research paper shall be prepared by each student based upon the topic approved by the institute in around 5000 words, in the format specified by the university. The paper must adhere to the plagiarism norms as given by UGC and a plagiarism report will be attached as a part of the submission. A research seminar to be conducted internally at the end of the term which shall be mandatory for internal evaluation.

OUTCOME

Students at the end of the semester should be able to undertake independent research in the field of design & project management and present it in the appropriate technical formats as required.

RECOMMENDED READING

All books/ Journals/ Magazines/ unpublished thesis related to the topic selected by the individual student.

SUBJECT TITLE: **Design and Project Management Framework and Practical Training**				
Subject Code 2019DPM 303				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	2	Sessional	150	
Studio Periods per week	2	Viva/Oral	50	
Total Contact Periods (60 min period) Per week		In-semester Examination	Nil	
		End-semester Examination	Nil	
Total Credits	**4**	**Total Marks**	**200**	

COURSE OBJECTIVES

- Developing the required practical exposure to design and project management practices adopted by organizations operating in the AEC sector, through practical training.
- Understanding the complex nature of large-scale projects and the importance of frameworks to manage such projects.
- Exposure to practical implementation of guidelines and processes for effective project management.
- Understanding Design management hierarchy and knowledge areas

COURSE CONTENT

Practical training has to be undertaken during the intermediate time between semester II and III, which has to be for a minimum of 40 working days. The organization providing practical training must operate in the AEC sector, working on large scale projects of any typology.

The trainee has to gain exposure to the project management practices of the organization through working on any project(s), under the supervision of the project team. The process of design & project management has to be studied and documented for various stages of the project, across all the knowledge areas.

Exposure to the framework of the Design & Project management should be sought through study of Project Management Process manuals, implementation strategies and monitoring checks. This will be inclusive of design brief, requirement research and stakeholder expectation, ideation, concept design, validation, detailed design, evaluation of design output, monitoring throughout procurement, construction and closing out.

Unit 1

Introduction to design management framework; significance of design management, stages in design management, areas of design management (product, brand, service, business and engineering)

Unit 2

Principles of design management; design management knowledge (Design related organizational issues, design vision and strategies, process and environment for design and designer resource management)

Unit 3

Hierarchy in design management: Strategic, Tactical and operational; Value for business, design strategy and leadership; Design brief, research method and tools; Design communication, operation and quality.

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

The documentation of work performed during training and documentation of Design & Project Management processes will be compiled in the report format. The report should be authenticated by the organization providing Practical Training. Students will also produce the work samples, work diary and certificate of internship, authenticated by the organization.

Internship data will be used for case study and assignments on identifying and studying design process framework shall be carried out. Submission could be in report format.

OUTCOME

Assimilation to the project management process in practical conditions in contrast to the theoretical frameworks. Practical training imparts ability to understand & interpret published frameworks/standards and modulate as per the operations of the organization.

RECOMMENDED READING

1. Emmitt Stephen, Design Management for Architects
2. Eynon J, The Design Manager's Handbook
3. Ivy M. A. Abu & Theophilus Adjei-Kumi (2018) Design Management Framework

SUBJECT TITLE: **Project Financial Management and Risk Management**				
Subject Code 2019DPM 304				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	2	Sessional	Nil	
Studio Periods per week	1	Viva/Oral	Nil	
Total Contact Periods (60 min period) Per week	3	In-semester Examination	30	
		End-semester Examination	70	
Total Credits	**3**	**Total Marks**	**100**	

COURSE OBJECTIVES

The objective of the module is to familiarize students with the fundamentals of financial management concepts and their applications in the various phases of the project cycle. The course aims to provide a basic knowledge to carry out the financial feasibility of projects, an evaluation of project investment decisions. It also focuses on project risk management, including project risk planning, roles and responsibilities, risk definitions and categories, opportunity and risk identification, risk analysis, risk response or risk treatment, and risk monitoring and control. It aims to introduce to the students tools and techniques for qualitative and quantitative risk analysis.

COURSE CONTENT

Unit 1:

Introduction to finance management, Time value of money, capital budgeting technique, cash flow forecasting and management, S-curve, revenue recognition, break-even analysis, Discounted cash flow; NPV, IRR, ROR; Financial ratios Debt-to-equity, LTV, Interest coverage ratio, EBITDA, Acid test ratio, Asset turnover ratio, Profit margin, ROA etc. financial statement analysis; balance sheet; income statement; project-loss statements; profit after taxation

Unit 2:

Financial appraisal of project, Capital budgeting and working capital management, financial risks and uncertainties, financial health of project, investment performance monitoring and evaluation.

Unit 3:

Role of Financial institutions, financing project – Debt finance, Equity finance, Grants, JVs, Owner finance, International financing, FDI;

Unit 4

Introduction to Risk Management; Risk management processes during planning, design and construction stage, Identifying risk, analysis and classification based on severity and frequency of occurrence, risk prioritization and mitigation strategies, Risk monitoring and control;

Unit 5

Risk assessment – quantitative and qualitative, tools and techniques of risk assessment; SWOT, Brainstorming, decision trees, fault tree analysis, monte-carlo simulation; Risk performance reporting

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

Case based study to understand the correlation of finance with project schedule, assessing the financial health of the live project, identifying potential risks and suggesting mitigation strategies, documented in report format.

Notes/journal assignments covering all topics mentioned above with suitable examples and supportive materials

OUTCOME

This course imparts knowledge of Project Finance and Risk, enabling decision making process. Through this knowledge students can analyse and choose approriate financing source and determine profitability of project. Strategically made financial decision corrsponds to the risk apetite of the organization. Understanding risk and its treatment enables managers in controlling the adverse impact of inevitable circumstances.

RECOMMENDED READING

- PMBOK by PMI
- Prasanna Chandra – Financial Management : Theory & Practice
- IM Pandey – Finance Management
- Ovidu Cretu (2011) Risk Management for design and construction
- Stephen Ogunlana, Prasanta Kumar Dey (2020) Risk Management in Engineering and Construction Tools and Techniques

SUBJECT TITLE: **Quality Management & Health Safety & Environment (HSE) Management**				
Subject Code 2019DPM 305				
Teaching Scheme		**Examination Scheme**	**Marks**	
Theory Periods per week	2	Sessional	Nil	
Studio Periods per week	1	Viva/Oral	Nil	
Total Contact Periods (60 min period) per week	**3**	In-semester Examination	30	
		End-semester Examination	70	
Total Credits	**3**	**Total Marks**	**100**	

COURSE OBJECTIVES:

Imparting knowledge of quality management through study of different aspects of quality and quality control.

Imparting knowledge of health and safety management and different aspects of employee / labour and public safety

COURSE CONTENT:

Unit 1

Introduction, definition of quality, Aspects of Quality, Quality Control and its methods, inspection, testing, sampling quality assurance in projects, total quality management and its importance in construction project, essential elements of TQM, management commitment and leadership, training, teamwork, statistical methods, cost of quality, supplier involvement, Hindrances in adoption of TQM, Tools and techniques of TQM adopted by a construction company stating process of evolution of quality.

Unit 2

Construction Quality Assessment System, BIS and other Indian Codes for quality control ISO Standards: Benefits of ISO 9000, ISO 9001-2000 Family of Standards, Latest ISO Standards.

Unit 3

Introduction to safety, employee / labour and public responsibility and safety, accident causation theories, unsafe conditions, unsafe acts, Causes of accidents, principles of safety, labour safety, precaution, roles of safety personnel, Types of accidents on construction works' sites, workers' health, first-aid facilities, emergency response protocol.

Unit 4

Safety, health and environment management principle, systems and practices of safety management occupational health, safety policy and organization, safety organization Education and training, hygiene in construction, safety plan, safety manual, safety budget, safety committee, safety incentive programmes.

Unit 5

Accident reporting, incident investigation and analysis and record keeping, safety inspection, safety audit, safety gear / equipment and installation, at-operation rules and mandates, site safety environment

Unit 6

Cost of accidents, direct cost & indirect cost for workers and employers, compensation, insurance Health and Safety Act and Regulations, Public Liability Act 1991.

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK:

Study of individual topics of assignment from literature and field
To understand evolution of quality through individual case study of a project / organisation / business and its life cycle
To study quality, health and safety management through individual case study of ISO-certified Company related to construction industry

OUTCOME:

Through this course students will understand aspects and parameters of quality, health, safety and environmental management in construction projects.
This course will develop a knowledge to manage a quality construction project from start to completion while maintaining occupational health, safety and environmental requirements.

RECOMMENDED READING:

- Nelson Charles., (2006) Managing Quality in Architecture, Oxford: Elsevier
- Davies V J, Tomasin K., (1990) Construction Safety Handbook,London: Thomas Telford Ltd
- Peurifoy. R.L., Schexnayder C.J., Shapira A.,(2013) Construction Planning Equipment and Methods, New Delhi: McGraw Hill Education (India) Private Limited
- Seetharaman S., (2015) Construction Engineering and Management, Delhi:Umesh Publication

SUBJECT TITLE: **Soft lab III : Project Management & ERP**				
Subject Code 2019DPM 306				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	1	Sessional	100	
Studio Periods per week	1	Viva/Oral	Nil	
Total Contact Periods (60 min period) Per week	2	In-semester Examination	Nil	
		End-semester Examination	Nil	
Total Credits	**2**	**Total Marks**	**100**	

COURSE OBJECTIVES

- Understanding the integration of project management tools within ERP systems, and the benefits they offer in terms of project planning and coordination.
- Familiarizing with Project management tools used for project related coordination and communication
- Developing the skills to effectively communicate with stakeholders, including project promoters, consultants, contracting professionals, and project execution team, to ensure the successful adoption and use of the ERP system.

COURSE CONTENT

1. Enterprise Resource Planning - Introduction to ERP systems: Definition, history, and evolution of ERP systems, benefits of ERP systems, and overview of different ERP modules.
2. ERP Modules: In-depth study of various ERP modules such as financials, human resources, procurement, supply chain management, inventory and project management.
3. Project Management tools: On premise and Cloud based tools for task management, resource management, collaboration, document management, progress tracking, risk management, integration and reporting.
4. Introduction to data management tools for analysis and visualization of design data.

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

Documentation hands-on experience of ERP and Project management tools in generating dashboards & reports, submitted as a sessional report; as directed by subject coordinator.

OUTCOME

Developing the skills needed to effectively implement and manage an ERP system, including project management.

Gaining hands-on experience with specific ERP and project management tools

RECOMMENDED READING

- Jawadekar Waman S. (2011) Management Information System
- Alexis Leon (2019) Enterprise Resource Planning, McGraw Hill
- D P Goyal (2011) Enterprise Resource Planning a Managerial Perspective

SEMESTER IV

SUBJECT TITLE: **Project**				
Subject Code: 2019DPM 401				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	4	Sessional	600	
Studio Periods per week	16	Viva/Oral	200	
Total Contact Periods (60 min period) Per week	20	In-semester Examination	Nil	
		End-semester Examination	Nil	
Total Credits	**20**	**Total Marks**	**800**	

COURSE OBJECTIVES

The objective of the project is to provide an opportunity to the students to prepare independent and original study of a special project of his/her own choice.

COURSE CONTENT

The subject for special study may be conceptual or practical but pertaining to Design Management or Project Management. This should however, offer scope to adopt a fresh approach in formulating a concept or developing a methodology effective and useful.

Each student will prepare the project under the guidance of a faculty with regular reviews. The project will be presented in the accepted form duly supported by references, sketches, graphs, statistical data, details of survey if any, detailed account of experimental / analytical procedures adopted. Each student is required to defend his project at a Viva Voce Examination by jury.

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

The final project should be submitted in black bound hard copy as well as a soft copy on CD.

OUTCOME

On completion of the project, students will be in a position to take up any challenging practical problems in the field of design or project management and find better solutions to it.

RECOMMENDED READING

All books/ Journals/ Magazines/ unpublished thesis related to the topic selected by the individual student.

SUBJECT TITLE: **Elective III – Industry based**				
Subject Code: 2019DPM 402				
Teaching Scheme		Examination Scheme	Marks	
Theory Periods per week	1	Sessional	150	
Studio Periods per week	4	Viva/Oral	50	
Total Contact Periods (60 min period) Per week	5	In-semester Examination	Nil	
		End-semester Examination	Nil	
Total Credits	**5**	**Total Marks**	**200**	

COURSE OBJECTIVES

To expose the students to interdisciplinary areas of their interest and impart them with theoretical knowledge and practical understanding of the subject offered in the elective. The objective of this elective is to understand special topics mentioned below by way of interacting with the professional/industry partner and supported by literature review.

COURSE CONTENT

The students can choose to work on any aspect of the topics mentioned.

1. Facility maintenance & management
2. Human Resource management for Building Projects
3. Real estate management
4. Project Planning for disaster management
5. Labour laws and compliance system in Construction

Individual colleges may offer the students one or more topics, depending upon the availability of experts and resource material. The colleges will have the opportunity and choice to focus on one or more of the topics. Being an open interdisciplinary elective, the topics offered for the elective shall be outside the core knowledge domain of architecture. The open elective would be offered by departments/schools other than architecture. In case the topics offered cannot be conducted the students can take any one of the topics offered in either elective I or elective II but not opted for by the students earlier.

Detailed syllabus for the topics will be finalized by individual colleges in consultation with expert faculty, considering the time and marks allotted to the subject.

SUBMISSION REQUIREMENT FOR THE SESSIONAL WORK

The mode of teaching learning shall be decided by the experts and the department where the elective is offered. The outcome and submission shall be in the form of report / journal/ model/ or any other form suitable for the topic studied.

OUTCOME

Students at the end of the semester should have learnt / understood the broad idea and concept inherent in the subject as well as its application and importance in the field of design and project management.

RECOMMENDED READING

As per the topic offered